Proposed Automotive Test Track Considered Crucial for High-Speed Combat Driving

Michael Cast

Roadside bombs and other attacks in Afghanistan and Iraq underscore the need for military vehicles that can maneuver rapidly, often on unpaved roads, while carrying the weight of added armor, weapons, ammunition and equipment. This change in operations poses a potentially serious problem for the U.S. Army because many of its utility vehicles were originally designed to travel at significantly slower speeds and drastically lighter payloads than today's missions demand — and with no armor protection.

None of the existing automotive test tracks at the Army's Aberdeen Test Center (ATC) can adequately support sustained high-speed automotive testing. ATC envisions an Automotive Technology Evaluation Facility (ATEF) that will give it enhanced capabilities for high-speed testing and maneuvering. (U.S. Army file photo courtesy of ATC.)

The Army Test and Evaluation Command (ATEC) and its technical staff in the Developmental Test Command (DTC) and DTC's Aberdeen Test Center (ATC) are seeking to address that problem by constructing an Automotive Technology Evaluation Facility (ATEF) at Aberdeen Proving Ground (APG), MD. The planned facility would be used to test military vehicles at sustained speeds of 70 miles per hour or faster, a capability ATC currently lacks, despite operating a variety of test tracks at the proving ground, said ATC's Randy Babcock, one of many people striving to make the ATEF a reality.

"None of the currently existing courses at APG can support sustained high-speed testing," Babcock explained. "The ATEF is a capability desperately needed so DTC can evaluate test vehicles in ways in which they are employed by Soldiers in the field. Testing would then be able to identify possible safety and reliability issues to allow safe and effective use of vehicles in theater."

According to Army sources, U.S. Soldiers in the combat zone do 90 percent of their driving on roads — both paved and unpaved — and at maximum possible speeds. They put a great deal of mileage on their vehicles, often from 500 to 2,000 miles per mission. Insurgent attacks have also made it necessary to drive vehicles with armor protection that they were not originally designed to carry. The weight of added armor on convoy vehicles negatively impacts both reliability and performance characteristics. "The ATEF would enable testing that reflects these realities," Babcock continued. "Additionally, ATC engineers see this facility as essential to the Tactical Vehicle Reset Program, the Army's program for reconditioning tactical military vehicles that have undergone heavy operational use in Afghanistan and Iraq."

The Stryker interim armored vehicle is put through its paces during road trial testing at ATC. (Photo courtesy of ATC.)

"ATC has tested numerous vehicles with armor kits in the past two years at Aberdeen facilities, but we haven't been able to do all the testing we wanted to perform because of the inability to perform sustained high-speed operations and because of accelerated timetables for getting these systems fielded," remarked ATC's Todd Morris, also involved in the project. "ATEF will give us that capability. Right now, our only high-speed track is a bidirectional, two-lane paved roadway with short-radius circular turnarounds at each end to return traffic to the straight section of the course. Traffic at each end of the course must slow to 25 mph to negotiate the turns before getting back up to the desired test speed. Once they get back up to speed, you only have a minute at maximum speed before they have to slow down to turn around at the other end. ATEF is designed to keep that speed up throughout."

The facility as currently planned would consist of a tri-oval test track with a 57-foot-wide roadbed containing two paved and two gravel lanes that loop around Phillips Army Airfield in APG's northwest section. The track would be 4.5 miles long and have curves with at least a 1,600-foot turning radius to enable safe turns with a minimum of banking. The course would also have 75-foot runoff shoulder areas on the edge of the track to allow vehicle drivers to safely stop or control vehicles in the event of a mechanical failure. The ATEF is designed to permit safe testing at high speeds for vehicles the Army currently uses and to provide safe sustained high-speed testing of future military vehicles such as those being developed for the Army's Future Combat Systems.

"The facility's proximity to Phillips Army Airfield, in an area selected for minimum environmental impact, would not pose an aviation safety problem or interfere with the airfield's operations," Babcock said. "There are a lot of guidelines and practices you need to follow whenever you build something close to an airfield, and we have coordinated the location of the track to maximize test use while minimizing the effect of our operations on the airfield. Traffic control systems

An M2A2 Bradley Fighting Vehicle kicks up a cloud of dust as it leaves Forward Operating Base MacKenzie in Iraq. The DTC's ATC is seeking to build an ATEF to enhance the test capabilities at ATC for both tracked and wheeled vehicles. (U.S. Air Force photo by SSGT Shane Cuomo.)

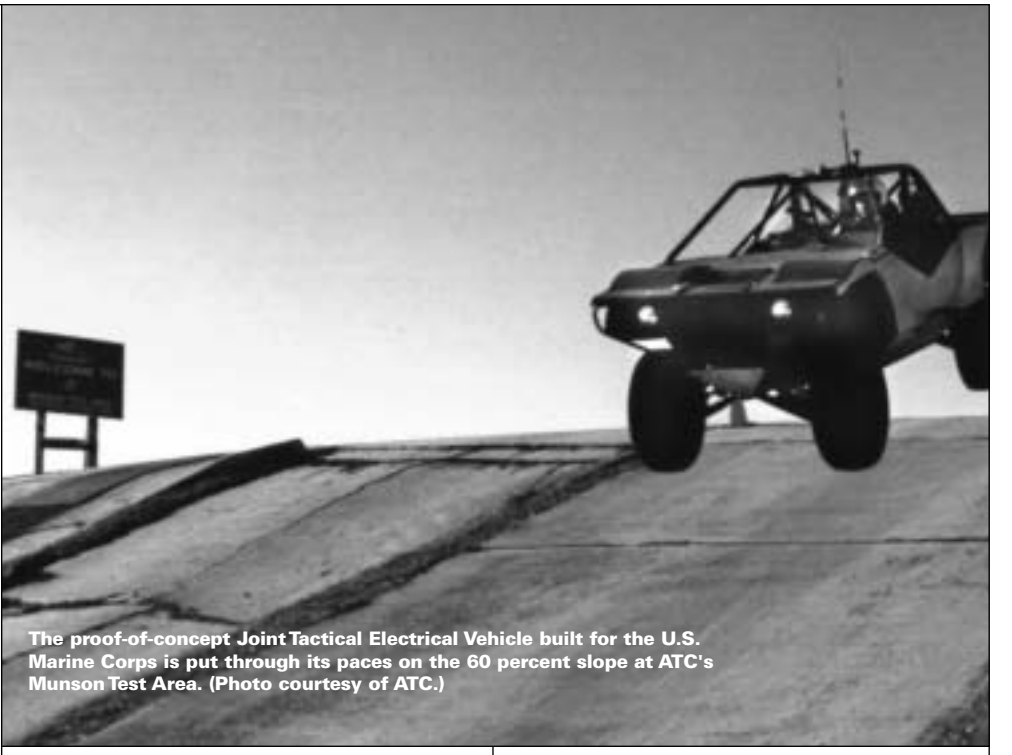
will be in place around the track to assure safe operation around the airfield and on the test track."

The ATEF project has a history that goes back nearly two decades and includes numerous studies. To complete a site feasibility study, an independent firm examined 10 other DOD installations across the United States and four private-industry sites in Arizona, California, Nevada and Ohio. ATC has been designated as DOD's Automotive Center of Excellence, and has developed expertise valued throughout the DA. For this and various other reasons, ranging from lack of adequate size to a lack of security, the study indicated that APG would be the best location for the facility.

"Although the current war is taking place in the desert, the temperate climate in Maryland is absolutely necessary for realistically testing Army vehicles that might be used anywhere in the world in the future," explained ATC's J.P. Moore, a mission support contractor closely involved with the project. "The environment at APG replicates 80 percent of the world's climatic conditions. Other places don't have that. APG is the Army's only temperate-climate Major Range and Test Facility Base."

An initial study ruled out several areas of the proving ground because of their use as active ranges or because they were within areas containing roads or buildings. The airfield area stood out as the most logical location for the ATEF because it is in an area of APG where the track would have the least impact on wetlands.

The proposed course for the ATEF was altered more than once to lessen the environmental impact, reducing it to about 17.5 acres of wetland impact.



The proof-of-concept Joint Tactical Electrical Vehicle built for the U.S. Marine Corps is put through its paces on the 60 percent slope at ATC's Munson Test Area. (Photo courtesy of ATC.)

To mitigate that impact, the Army is planning to create or enhance wetlands in other locations. The U.S. Army Corps of Engineers (USACE), which is close to completing a 10-percent design of the ATEF, is including wetland mitigation measures in the design.

"USACE projected two years ago that ATEF would be a multimillion dollar project, a sum ATEC and DTC will have difficulty funding without congressional support," said Todd Morris, another ATC employee closely involved with the ATEF project. "Although the ATEF is scheduled for construction funding in 2011, DTC Commander BG Michael Combest sees the facility as crucial to the war effort underway, now that high-speed driving is the norm in the combat zone. To build a facility that will directly support Soldiers, Combest is pushing for funding and construction three years ahead of the current schedule."

"The track has been conceptualized; it has been laid down in a rough position around Phillips for the last five to eight years," Babcock continued. "In the last eight or nine months we've been working hard to address the aviation safety issues, minimize impact to the wetlands and to go out and talk to every [APG] tenant that has operations adjoining the ATEF track to alleviate people's concerns. We actually bumped the track here and there to be outside the explosive safety arc around the new National Ground Intelligence Center facility."

The road ahead for the ATEF may be bumpy because of the cost of construction, but its proponents at DTC and ATC believe very strongly that this added test capability will ultimately pay off in a big way for the safety of U.S. Soldiers. Its location near ATC's diverse test tracks would greatly facilitate other types of vehicle testing as well.

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